

May 4, 1882.

THE PRESIDENT in the Chair.

The Presents received were laid on the table, and thanks ordered for them.

In pursuance of the Statutes, the names of Candidates recommended for election into the Society were read from the Chair, as follows:—

Ball, Professor Valentine, M.A.	Godman, Frederic Du Cane,
Brady, George Stewardson, M.D., F.L.S.	F.L.S.
Buchanan, George, M.D.	Hutchinson, Professor Jonathan, F.R.C.S.
Clarke, Charles Baron, M.A., F.L.S.	Liversidge, Professor Archibald, F.G.S.
Darwin, Francis, M.A., F.L.S.	Malet, Professor John C., M.A.
Dittmar, Professor William, F.C.S.	Niven, William Davidson, M.A.
Gaskell, Walter Holbrook, M.D.	Palgrave, Robert Henry Inglis, F.S.S.
Glazebrook, Richard Tetley, M.A.	Weldon, Walter, F.C.S.

The following Paper was read:—

- I. “On the Specific Resistance of Mercury.” By LORD RAYLEIGH, F.R.S., Professor of Experimental Physics in the University of Cambridge, and MRS. H. SIDGWICK. Received April 24, 1882.

(Abstract.)

The observations detailed in the paper were made with the view of redetermining the relation between the B.A. unit and the mercury unit of Siemens, *i.e.*, the resistance of a column of mercury at 0°, one metre in length, and one square millim. in section.

According to Siemens' experiments,

$$1 \text{ mercury unit} = \cdot 9536 \text{ B.A. unit,}$$

and according to Matthiessen and Hockin,

$$1 \text{ mercury unit} = \cdot 9619 \text{ B.A. unit.}$$

The value resulting from our observations agrees pretty closely with that of Siemens. We find

$$1 \text{ mercury unit} = \cdot 95418 \text{ B.A. unit.}$$

Four tubes were used to contain the mercury, of lengths varying from 87 to 194 centims.. The diameter of the three first tubes was about 1 millim. and that of the fourth about 2 millims. The final numbers obtained from the several fillings of the tubes are as follows :—

Tube I.	$\left\{ \begin{array}{c} \cdot 95386 \\ \cdot 95412 \\ \cdot 95424 \\ \cdot 95436 \\ \cdot 95421 \end{array} \right\}$	Mean $\cdot 95416$
Tube II.	$\left\{ \begin{array}{c} \cdot 95389 \\ \cdot 95414 \\ \cdot 95437 \\ \cdot 95436 \end{array} \right\}$	Mean $\cdot 95419$
Tube III.	$\left\{ \begin{array}{c} \cdot 95424 \\ \cdot 95418 \\ \cdot 95399 \\ \cdot 95425 \end{array} \right\}$	Mean $\cdot 95416$
Tube IV.	$\left\{ \begin{array}{c} \cdot 95440 \\ \cdot 95415 \end{array} \right\}$	Mean $\cdot 95427$

Combining the results of the present paper with our determination of the B.A. unit in absolute measure, we get

$$1 \text{ mercury unit} = \cdot 94130 \times 10^9 \text{ C.G.S.}$$